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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 09/739,483 | 12/18/2000 | Johan Christiaan Fitter | 33236/207269 | 9478 |

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ALSTON & BIRD LLP
BANK OF AMERICA PLAZA
101 SOUTH TRYON STREET, SUITE 4000
CHARLOTTE, NC 28280-4000

EXAMINER

CANTELMO, GREGG

ART UNIT PAPER NUMBER

1745

DATE MAILED: 08/19/2002

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Please find below and/or attached an Office communication concerning this application or proceeding.

| | | | |
|------------------------------|-----------------|--------------------------|--|
| Office Action Summary | Application No. | Applicant(s) | |
| | 09/739,483 | FITTER, JOHAN CHRISTIAAN | |
| | Examiner | Art Unit | |
| | Gregg Cantelmo | 1745 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☐ Responsive to communication(s) filed on ____.

2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.

3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) ☒ Claim(s) 1-14 is/are pending in the application.

4a) Of the above claim(s) ____ is/are withdrawn from consideration.

5) ☐ Claim(s) ____ is/are allowed.

6) ☒ Claim(s) 1-14 is/are rejected.

7) ☐ Claim(s) ____ is/are objected to.

8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

9) ☒ The specification is objected to by the Examiner.

10) ☒ The drawing(s) filed on 12/18/00 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a) ☐ All b) ☐ Some * c) ☐ None of:

1. ☐ Certified copies of the priority documents have been received.

2. ☐ Certified copies of the priority documents have been received in Application No. ____.

3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

| | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) <u>4</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Information Disclosure Statement

1. The information disclosure statement filed April 6, 2001 has been placed in the application file and the information referred to therein has been considered as to the merits.

Drawings

2. The drawings received December 18, 2000 are acceptable for examination purposes.

Specification

3. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

The following title is suggested: Lead-acid electrochemical cell having a current reducing additive.

4. The disclosure is objected to because of the following informalities: at page 5, the last paragraph of the specification recites a wide range of quaternary ammonium compounds are useful in the instant invention. In the background disclosure of the instant application (page 2, last two paragraphs) the specification discloses that the quaternary ammonium compound in the patent to Lewenstein, while suppressing hydrogen formation but does not provide for evolution of gas caused by electrical stimulation.

It appears that not all quaternary ammonium compounds provide the functions relative to the conditions applied to the electrochemical cell of the instant claims. Yet the specification teaches that a "wide range" of quaternary ammonium compounds are useful. It is unclear then as to what ammonium compounds are useful and which are not since it appears from the background disclosure, drawn to the Lewenstein patent, that not all quaternary ammonium compounds are useful and the instant invention fails to clearly set forth which ammonium compounds are useful.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claims 1-14 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

- a. Claim 1 recites the limitations "the flow of current" in line 5 and "the amount of electrolysis" in lines 7-8. There is insufficient antecedent basis for these limitations in the claim. This also applies to claims 2-5 which include the limitations of claim 1.
- b. Claim 2 recites that "the latter are included in the presence of suitable cations." The claim does not appear to clearly set forth which of the components in the claim are part of this "latter" group.

- c. Claim 6 recites the limitation "the electrolyte" in lines 2-3, "the current" in line 3, and "the electrodes" in line 3. There is insufficient antecedent basis for these limitations in the claim. This also applies to claims 7-11 which include the limitations of claim 6.
- d. Claim 7 recites the limitation "the terminals" in 4. There is insufficient antecedent basis for this limitation in the claim.
- e. Claim 9 recites the limitation "the negative electrode" in line 2. There is insufficient antecedent basis for this limitation in the claim.
- f. Claim 12 recites the limitations "the flow of current" in line 10 and "the flow of ions" in line 11 and "the flow of gas bubbles" in line 12. There is insufficient antecedent basis for these limitations in the claim. This also applies to claims 13-14 which include the limitations of claim 1.

Claim Rejections - 35 USC § 102

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

8. Claims 1, 2, and 6-13 are rejected under 35 U.S.C. 102(b) as being anticipated by JP 10-302 785 A (JP '785).

JP '785 discloses an electrochemical cell comprising opposed positive and negative electrodes and an electrolyte in ionic contact with the electrodes. The current

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reducing additive is a fatty acid film. The liquid losing characteristic is improved because hydrogen generating reacting is suppressed during overcharging by forming a fatty acid film on an active material surface (abstract as applied to claim 1). It has been held that the recitation that an element is "capable of" performing a function is not a positive limitation but only requires the ability to so perform. It does not constitute a limitation in any patentable sense. *In re Hutchinson*, 69 USPQ 138.

A fatty acid film being an example of a non-ionic compound (as applied to claim 2).

JP '785 is drawn to a method of reducing liquid loss in an electrochemical cell including the step of introducing a current reducing additive, a fatty acid, into the electrolyte to reduce the current between the electrodes when a potential sufficient to cause electrolysis is applied across the electrodes, thereby to reduce gas evolution at the electrodes and water loss (as applied to claim 6).

The electrochemical cell is a battery and the current reducing additive reduces the current between the electrodes when a potential above which the battery is fully charged is applied across the terminals (as applied to claim 7).

The battery is a lead-acid battery (title as applied to claim 8).

The current reducing additive reduce gas evolution through the battery which would include that at the negative electrode (as applied to claim 9).

The fatty acid also present in the negative electrode, forms a film on the active material surface of the negative electrode thus acting as a barrier or impediment for gas evolution from the negative electrode (abstract as applied to claim 10).

The gas bubbles are hydrogen bubbles and the ions attracted to the negative electrode would be hydrogen ions (abstract as applied to claim 11).

JP '785 discloses an electrochemical cell comprising opposed positive and negative electrodes, an aqueous electrolyte in ionic contact with the electrodes and a fatty acid, current reducing additive, in ionic contact with the electrolyte and electrodes. The current reducing additive, the fatty acid, being arranged to adhere or adsorb to the negative electrode and form a film thereon (impediment or barrier) and over the negative electrode surface. When a potential ordinarily sufficient to cause electrolysis of the electrolyte is applied to the electrodes the fatty acid barrier reduces the flow of gas bubbles from the negative electrode (abstract as applied to claims 12 and 13).

9. Claims 1-7 and 9-14 are rejected under 35 U.S.C. 102(b) as being anticipated by JP 50-091728 (JP '728).

JP '728 is drawn to an electrochemical cell (alkaline battery) having opposed positive and negative electrodes with an aqueous electrolyte in ionic contact with the electrodes. A current reducing additive dodecyldimethylbenzylammonium chloride is added to the electrolyte (abstract as applied to claim 1). It has been held that the recitation that an element is "capable of" performing a function is not a positive limitation but only requires the ability to so perform. It does not constitute a limitation in any patentable sense. *In re Hutchinson*, 69 USPQ 138.

The current reducing additive is dodecyldimethylbenzylammonium chloride (as applied to claims 2 and 3).

The additive is added in various weight percents (see page 142 of the reference) which overlap the additive range of claims 4 and 5.

The method includes a step of introducing a current reducing additive to the electrolyte of the cell. Since the current reducing additive is the same material as that disclosed in the instant application it is expected to have the same effect on reducing water loss and reducing gas evolution (abstract as applied to claims 6, 7 and 9-11).

JP '728 is drawn to an electrochemical cell (alkaline battery) having opposed positive and negative electrodes with an aqueous electrolyte in ionic contact with the electrodes. A current reducing additive dodecyldimethylbenzylammonium chloride is added to the electrolyte or to the anode (negative electrode) and thus is arranged to adhere or adsorb to the negative electrode and form a barrier over a surface of the negative electrode when a potential sufficient to cause electrolysis of the electrolyte is applied across the electrodes. Since the current reducing additive, dodecyldimethylbenzylammonium chloride, is the same material as that disclosed in the instant application it is expected to have the same effect on reducing water loss, reducing gas evolution, and having a head for adsorbing to the negative electrode and a and tail arrangement to trap gas bubbles (abstract as applied to claims 12-14).

10. Claims 1, 2, 6, 7 and 9-14 are rejected under 35 U.S.C. 102(b) as being anticipated by U.S. patent No. 3,877,993 (Davis).

Davis discloses an electrochemical cell comprising opposed positive and negative electrodes an aqueous electrolyte in ionic contact with the electrodes and a

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current reducing additive, a quaternary ammonium compound, in ionic contact with the electrolyte and electrodes (prior art claim 1 as applied to claim 1).

It has been held that the recitation that an element is "capable of" performing a function is not a positive limitation but only requires the ability to so perform. It does not constitute a limitation in any patentable sense. *In re Hutchinson*, 69 USPQ 138.

The current reducing additive is a quaternary ammonium compound (prior art claim 1 as applied to claim 2). The transitional term "comprising" (and other comparable terms, e.g., "containing," and "*including*") is "open-ended" -it covers the expressly recited subject matter, alone or in combination with unrecited subject matter. See, e.g., *Genentech, Inc. v. Chiron Corp.*, 112 F.3d 495, 501, 42 USPQ2d 1608, 1613 (Fed. Cir. 1997). See MPEP § 2111.03. For example, in claim 2 the claim recites the current reducing additive is selected from the group consisting of quaternary ammonium compounds including particular compounds. Use of the term including, being open-ended, does not limit the quaternary ammonium compound to only those listed in the claims. Thus claim 2 is open to any quaternary ammonium compound (as applied to claim 2).

Davis is drawn to a method of reducing water loss in an electrochemical cell (col. 1, ll. 10-20). The method includes the steps of introducing a current reducing additive, a quaternary ammonium compound, in contact with the electrolyte of the cell. The specification fails to clearly define the types of quaternary ammonium compounds which are limited to the instant invention. As mentioned above, a wide range of quaternary ammonium compounds are useful in the instant invention. Applicant has not provided

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sufficient evidence that the prior art of does not provide the same function as set forth in claim 6, especially when the prior art of incorporates the same material, a quaternary ammonium compound, in an electrochemical cell for the same purpose of reducing water loss and inhibit gas evolution. And further that a wide range of quaternary ammonium compounds can be employed (col. 2, lines 11-68, and col. 3 line 48 through col. 5, line 33 as applied to claims 6 and 7).

The current reducing additive of Davis is a wide array of quaternary ammonium compounds. The instant application and claims broadly encompass quaternary ammonium compounds as useful additives. Thus the prior art of Davis is expected to have the same properties absent clear evidence to the contrary (as applied to claims 9-12).

Davis discloses an electrochemical cell comprising opposed positive and negative electrodes an aqueous electrolyte in ionic contact with the electrodes and a current reducing additive, a quaternary ammonium compound, in ionic contact with the electrolyte and electrodes. The current reducing additive is applied to the lead electrode (anode or negative electrode) and forms a film or barrier over the surface of the anode thereby causing a reduction in the flow of gas bubbles from the anode (prior art claim 1 and col. 1, ll. 10-20 as applied to claim 1). Since Davis uses a wide range of quaternary ammonium compounds, as does the instant application, the prior art additive of Davis is expected to have the same properties as the additive of the instant claim (as applied to claims 12-14).

Doubl Patenting

11. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Omum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

12. Claims 1-3 and 6-14 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 11, 15 and 16 of copending Application No. 09/927,805. Although the conflicting claims are not identical, they are not patentably distinct from each other.

A copy of US Patent Application Publication No. 2002/0038765 has been provided, it being the published application of copending Application No. 09/927,805.

Copending Application No. 09/927,805 claims an electrochemical cell comprising a positive electrode, an opposed negative electrode, and an aqueous electrolyte for use in a battery cell, the electrolyte being in ionic contact with the negative electrode. An additive material is provided for inhibiting electrodeposition on the negative electrode (claim 11). The additive material is recited in claim 16 which is the same materials disclosed and claimed in the instant application as the current reducing additive. Since these materials are the same, they are expected to have the same inherent properties

(as applied to instant claims 1-3). The limitations of claims 11 and 16 anticipate the limitations of instant claims 1-3.

Copending Application No. 09/927,805 provides an electrochemical cell having a step of providing n-alkyl dimethyl benzyl ammonium chloride or sodium dioctyl sulfosuccinate to an electrochemical cell having an electrolyte and electrodes. Since these materials are the same, they are expected to have the same inherent properties (claims 11 and 16 as applied to instant claim 6-7 and 9-11).

The battery is a lead-acid battery (claim 15 as applied to claim 8).

The limitations of claims 11, 15, and 16 anticipate the limitations of instant claims 6-11.

Copending Application No. 09/927,805 claims an electrochemical cell comprising opposed positive and negative electrodes and aqueous electrolyte in ionic contact with the electrodes and a current reducing additive, n-alkyl dimethyl benzyl ammonium chloride or sodium dioctyl sulfosuccinate (claim 16). The electrolyte is engendered with a deposition modifying agent, n-alkyl dimethyl benzyl ammonium chloride or sodium dioctyl sulfosuccinate, for inhibiting dendritic electrodeposition on the negative electrode. The modifying agent being the same as the current reducing additive of the instant application is arranged in the electrolyte as in the instant application and is held to be arranged to adhere or adsorb to the negative electrode and form an impediment or barrier over a surface of the negative electrode (claims 11 and 16 as applied to claim 12). Since these materials are the same, they are expected to have the same inherent properties (claims 11 and 16 as applied to instant claim 13 and 14).

The difference between instant claim 12 and claim 11 of Copending Application No. 09/927,805 is that claim 11 of Copending Application No. 09/927,805 does not explicitly recite that the aqueous electrolyte is in ionic contact with both the negative and positive electrodes.

In order for the electrochemical cell to effectively operate it is imperative that the electrolyte be in ionic contact with both the positive and negative electrodes. These three components when in ionic contact provide for ion mobility between the electrodes.

The motivation for providing the electrolyte in ionic contact with both the negative and positive electrodes is that it enables ionic mobility between the opposed electrodes.

Therefore it would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to modify the claims of Copending Application No. 09/927,805 by having the electrolyte in ionic contact with both the negative and positive electrodes since it would have enabled ionic mobility between the opposed electrodes through the electrolyte of an electrochemical cell.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Conclusion

13. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. USPAT 6,132,901 discloses a battery having a surfactant present in the electrolyte (abstract) which can include a quaternary ammonium compound (col. 5, ll. 50-55) USPAT 5,582,934 discloses a lead-acid storage battery including a

corrosion inhibitor such as pyridine. USPAT 3,953,242 discloses a battery having an electrolyte including a quaternary ammonium compound (abstract). USPAT 3,811,946 discloses a battery having a quaternary ammonium compound therein (col. 3, line 60 through col. 4, lines 5). USPAT 4,377,625 discloses a battery with reduced corrosion and hydrogen evolution (abstract). JP 55-062661 A discloses a battery having a quaternary ammonium salt in the electrolyte to prevent corrosion of the negative electrode (abstract). JP 61-080758 A discloses a battery which restricts the generation of hydrogen gas by using a quaternary ammonium salt as the anticorrosive agent (abstract). JP 61-240573 A discloses a battery whose gas evolution is reduced by using a phosphine compound and an organic ammonium salt (abstract).

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Gregg Cantelmo whose telephone number is (703) 305-0635. The examiner can normally be reached on Monday through Thursday from 8:00 a.m. to 5:30 p.m. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Pat Ryan, can be reached on (703) 308-2383. FAX communications should be sent to the appropriate FAX number: (703) 872-9311 for After Final Responses only; (703) 872-9310 for all other responses. FAXES received after 4 p.m. will not be processed until the following business day. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

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Patrick Ryan
Supervisory Patent Examiner
Technology Center 1700